

BARKON -

FRINK

DEC 16 1941

L-I-N-O-L-I-T-E

(Trade Mark)

The Ultimate in
**FLUORESCENT
LIGHTING**

Better light with LINOLITE
F. W. Woolworth Company
7th Ave. at 50th St.
New York City
(See 7000 series on page 10)



L-I-N-O-L-I-T-E

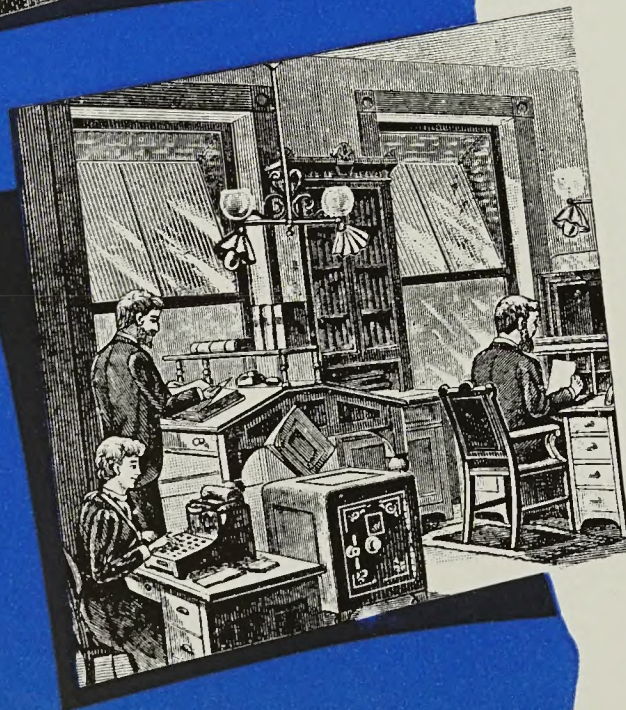


1857

... Eighty-four years ago Frink first developed the system of lighting dark rooms by reflected daylight. The method consisted of placing reflectors outside of the windows and reflecting the light on the ceiling inside, whence it was diffused throughout the room.

1888

... Natural consequences of this scheme were Frink's subsequent ideas for utilizing the principle of reflection to illuminate large rooms, first with oil lamps as the light source — and later with gas and electricity.



1898

... The reflector system of show window lighting, with both overhead and floor lights, was originated by Frink. This system was a success from the start, and hundreds of miles of Frink reflectors were installed in nearly every prominent store and show room throughout the country.

PRODUCT OF FRINK'S 84-YEAR LEADERSHIP IN LIGHTING

1912

... Frink engineers first conceived the idea of installing a continuous reflector on the inside of the cornice of a banking screen for lighting the counter in 1909. Three years later Frink produced the first combination reflector for both the lighting of counters and the indirect illumination of the room.

1937

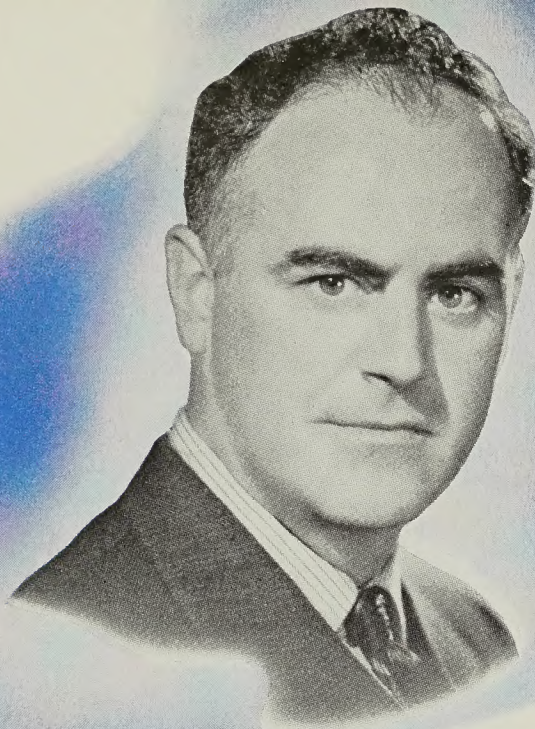
... In 1928, the acquisition of STERLING BRONZE COMPANY INC., enabled Frink to offer the first *complete* architectural service ... In 1937, BARKON-FRINK TUBE LIGHTING CORPORATION was formed to specialize in the design and manufacture of gaseous tube lighting.

TODAY-

... Working closely with leading manufacturers of the new Fluorescent lamps, Frink has pioneered in engineering, designing and fabricating all types of Fluorescent lighting equipment. In this modern development, as always, the making of finer equipment is part of our *complete, one-responsibility* lighting service. Every LINOLITE fixture shown in this catalogue is Engineered for Guaranteed Performance. And as the next two pages emphasize, there has never been a type of lighting where *Engineered Performance* is so vital to YOUR SATISFACTION.



BEFORE and AFTER installing continuous LINOLITE Fluorescent equipment in the general offices of the Equitable Life Assurance Society, New York City. See 7000 Series on Page 10.



In the past eight years, THOMAS J. KILLIAN, Ph.D. has been active in the development of all phases of gaseous tube lighting. Formerly with the research laboratories of the General Electric Company and Instructor in Electrical Engineering and Physics at Massachusetts Institute of Technology, he is recognized today as a leading authority in the Fluorescent field. As Technical Director of The Frink Corporation, Dr. Killian has written this brief but trenchant message for the benefit of those desiring to derive the utmost in satisfaction from Fluorescent lighting.

A WORD TO THE WISE

UNQUESTIONABLY, Fluorescent lighting is the greatest development in man's mastery of his environment during the past decade. Only three years old, its growth has been phenomenal. In 1938 approximately 250,000 Fluorescent lamps were sold; in 1939, two million; in 1940, seven million; and it is expected that sales this year will exceed *twenty million*.

Such a rapid increase has of course resulted in considerable confusion. Literally hundreds of new "companies" have been organized to manufacture Fluorescent fixtures. And almost over night, thousands of Fluorescent "experts" have sprung up to advise and sell the public. Inevitably, much money has been wasted by ill-advised purchasers who accepted misinformation as engineering facts.

As a type of lighting Fluorescent has the following primary advantages over other artificial light sources: It is the nearest thing ever attained to the *natural* daylight under which our eyes evolved. It is *twice as efficient* as incandescent light—yet, because its rays contain only one-fourth as much radiant heat, it rivals daylight in *coolness*. Finally, due to the comparatively low surface brightness of Fluorescent lamps far more efficient fixtures can be produced.

While fully appreciative of these basic advantages of Fluorescent lighting, The Frink Corporation has been keenly aware of the many pitfalls to be avoided in its application. We know that the principles of good lighting are unchanged by the introduction of a new source of light. Therefore, our Fluorescent recommendations are always in accord with the best lighting practice. For example, we have steadfastly opposed the use of bare tubes in unshielded fixtures, even though this form was actually recommended by some lamp manufacturers at the outset. (It is now generally recognized that the use of this type of fixture is definitely disturbing and harmful to the eyes due to glare.)

ABOUT FLUORESCENT

The efficiency of Fluorescent lighting is far more dependent upon *sound engineering* than is that of incandescent lighting. Fluorescent is not as *flexible* as incandescent. With incandescent lighting various sizes of lamps may be used in the same socket, and fixture costs do not vary greatly with the sizes of lamps used. Therefore, if the light level of an incandescent installation proves to be too high or too low, it is always possible to make an inexpensive adjustment by simply changing lamp wattages. Fluorescent lighting, on the other hand, *must* be efficiently engineered *right from the start*, because the lamp wattages are *fixed* and fixture costs increase with the number of lamps provided for. Little can be done if a poorly engineered Fluorescent installation provides insufficient illumination. Conversely, if the illumination level is too high, a substantial overinvestment in fixture costs has been wasted.

Every LINOLITE Fluorescent Fixture shown in this catalogue has been designed and manufactured by Frink to the rigid standards of efficiency developed during our eighty-four year experience in commercial and industrial lighting. All auxiliary equipment has been carefully pre-tested in our own laboratory. Each LINOLITE installation is *custom-engineered* by Frink experts to your individual requirements for light intensity, brightness-contrast, maintenance and architectural fitness. As a result, when Frink's specifications are followed, your Fluorescent installation is *GUARANTEED* for both efficiency and lasting satisfaction.

The significance of such a Guarantee is readily apparent to all who desire positive assurance of a sound long-term investment. It is especially significant in the face of the many makes of Fluorescent equipment which have merely been "assembled for sale," rather than "*engineered for performance*."

The soundest advice I can give on Fluorescent is—"Do it RIGHT, or not at all."

Thomas J. Killian

Technical Director

THE FRINK CORPORATION

Sterling Bronze Company, Inc.

Borkon-Frink Tube Lighting Corporation



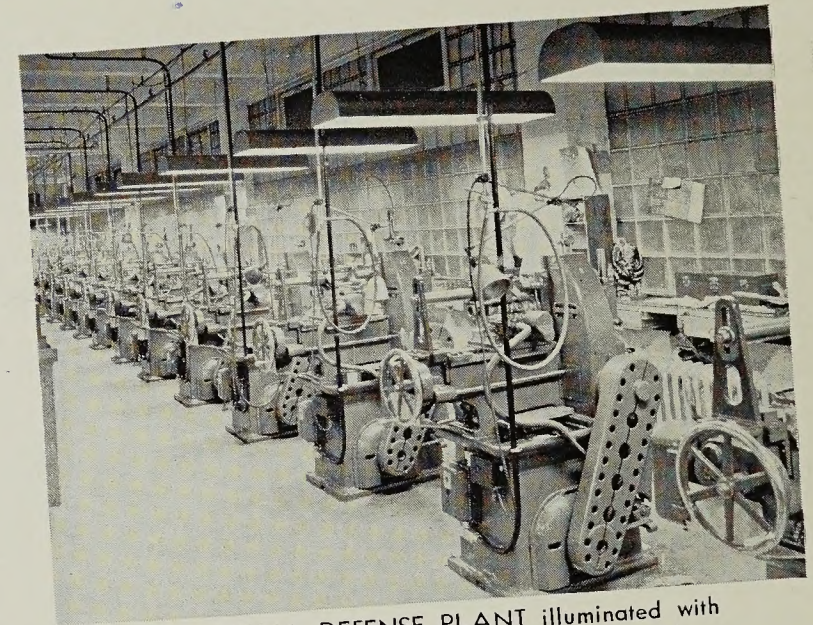
THEY DID IT RIGHT.....

Listed below are a few of the many prominent concerns which have recently been equipped with Frink LINOLITE Fluorescent equipment in their offices, public rooms, plants, drafting rooms, stores or showrooms.

Photos at right show a variety of typical installations where standard LINOLITE fixtures provide ideal light conditions.

American Tobacco Company
Bendix Aviation Corporation
Bell Telephone Company
Bristol-Myers Company
P. Ballantine and Sons
Congoleum-Nairn Company
Chase National Bank
Central Hanover Bank and Trust Co.
Deering-Milliken and Co.
Eastern Air Lines
Equitable Life Assurance Society
General Electric Company
Heald Machine Company
Travel Bureau, Grand Central R. R. Station
Hyatt Bearing Div. of General Motors
International Silver Company
Lord and Taylor

Johns-Manville Company
R. H. Macy and Company
New York Central R. R. Co.
New York Navy Yard
New York Savings Bank
New York Telephone Company
National Sugar Refining Co.
Public Service Electric & Gas Co.
Prudential Life Insurance Co.
Standard Oil Co. of New Jersey
Sperry Gyroscope Company
E. R. Squibb and Sons
The Schrafft Stores
Tiffany and Company
Warner-Swasey Company
Westinghouse Electric Company
F. W. Woolworth Company

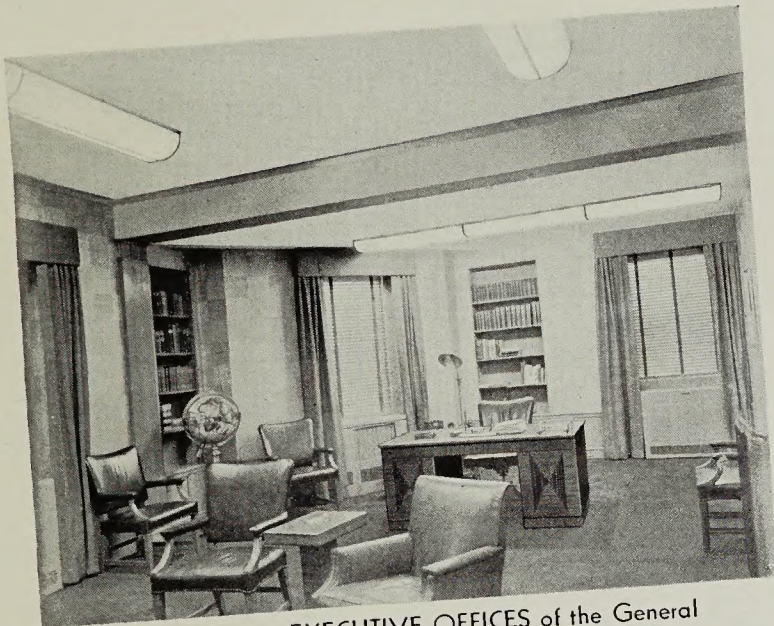


INDUSTRIAL DEFENSE PLANT illuminated with No. 1248 LINOLITE Industrial Fluorescent Units. See Page 18.

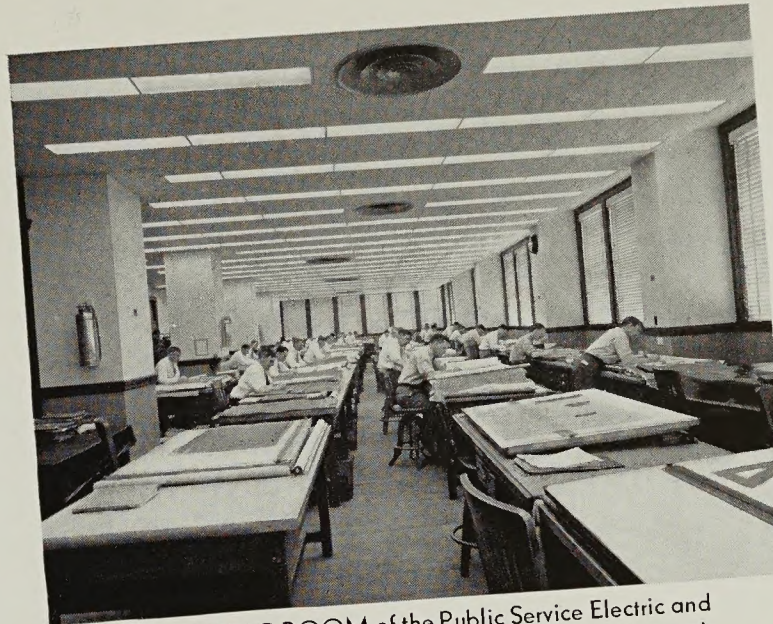


This fine modern MEN'S CLOTHING STORE is ideally lighted with continuous lines of 4000 Series LINOLITE fixtures. See Page 8.

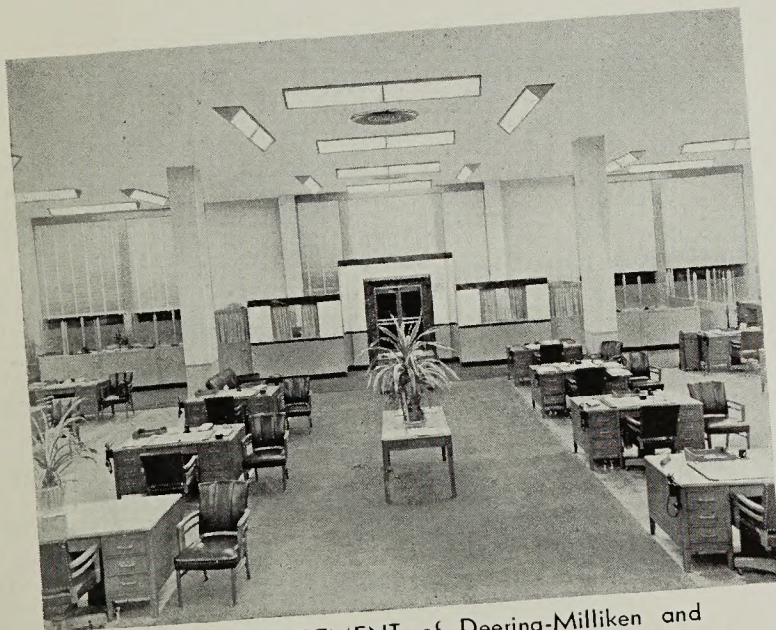
WITH *L-I-N-O-L-I-T-E* !



One of many EXECUTIVE OFFICES of the General Electric Company equipped with LINOLITE Custom-Built Fluorescent fixtures. See 8000 Series on Page 10.



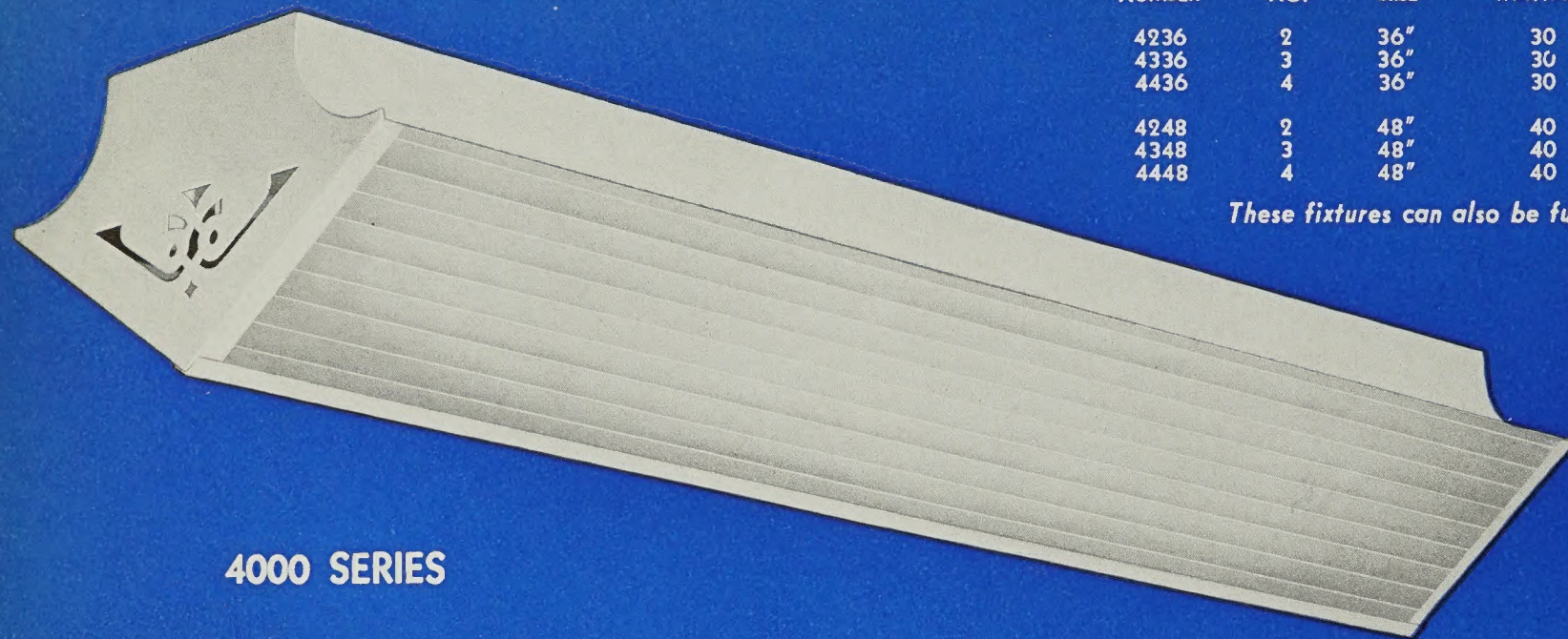
DRAFTING ROOM of the Public Service Electric and Gas Co. Illuminated with LINOLITE Troffers with lenses, providing 85 F. C. maintained. See Page 14.



SALES DEPARTMENT of Deering-Milliken and Co., New York City. Equipped with LINOLITE fixtures mounted on 16 ft. ceiling. See 7000 Series on Page 10.



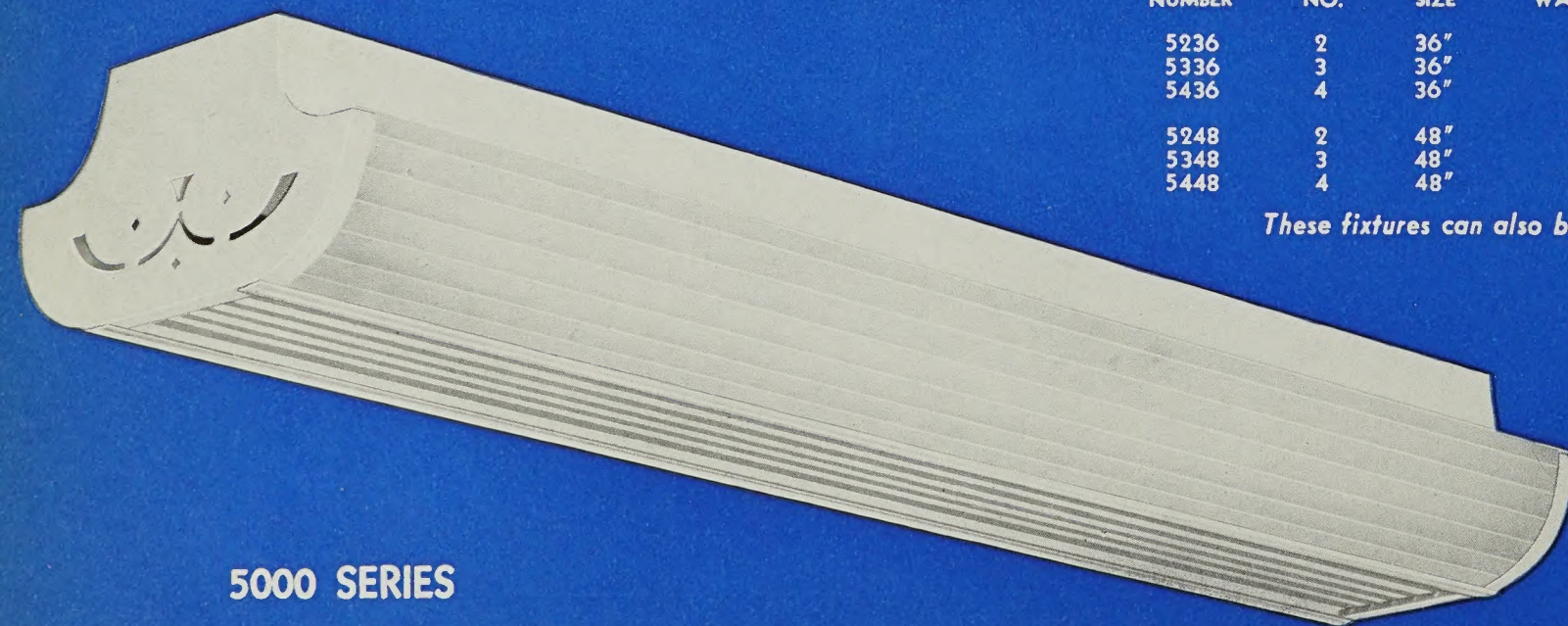
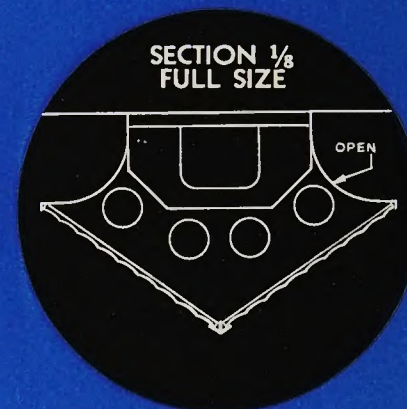
GENERAL OFFICES of the Columbian Carbon Company. Illuminated with LINOLITE Fluorescent fixtures set in the natural "coffers" formed by the beams. See 4000 Series on Page 8.



4000 SERIES

TYPE NUMBER	NO.	LAMPS SIZE	WATTAGE	WIDTH	DIMENSIONS DEPTH	LENGTH
4236	2	36"	30	12"	7 1/4"	36 1/4"
4336	3	36"	30	12"	7 1/4"	36 1/4"
4436	4	36"	30	13 1/2"	8 1/2"	36 1/4"
4248	2	48"	40	12"	7 1/4"	48 1/4"
4348	3	48"	40	12"	7 1/4"	48 1/4"
4448	4	48"	40	13 1/2"	8 1/2"	48 1/4"

These fixtures can also be furnished in 8 ft. lengths



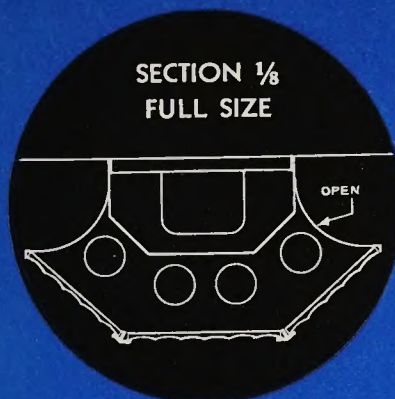
5000 SERIES

TYPE NUMBER	NO.	LAMPS SIZE	WATTAGE	WIDTH	DIMENSIONS DEPTH	LENGTH
5236	2	36"	30	12 1/4"	6 3/4"	36 1/4"
5336	3	36"	30	12 1/4"	6 3/4"	36 1/4"
5436	4	36"	30	13 1/2"	7 1/8"	36 1/4"
5248	2	48"	40	12 1/4"	6 3/4"	48 1/4"
5348	3	48"	40	12 1/4"	6 3/4"	48 1/4"
5448	4	48"	40	13 1/2"	7 1/8"	48 1/4"

These fixtures can also be furnished in 8 ft. lengths



COMMERCIAL FLUORESCENT TYPES



6000 SERIES

TYPE NUMBER	NO.	LAMPS SIZE	WATTAGE	WIDTH	DIMENSIONS DEPTH	LENGTH
6236	2	36"	30	12 1/4"	6 3/4"	36 1/4"
6336	3	36"	30	12 1/4"	6 3/4"	36 1/4"
6436	4	36"	30	13 1/2"	6 3/4"	36 1/4"
6248	2	48"	40	12 1/4"	6 3/4"	48 1/4"
6348	3	48"	40	12 1/4"	6 3/4"	48 1/4"
6448	4	48"	40	13 1/2"	6 3/4"	48 1/4"

These fixtures can also be furnished in 8 ft. lengths

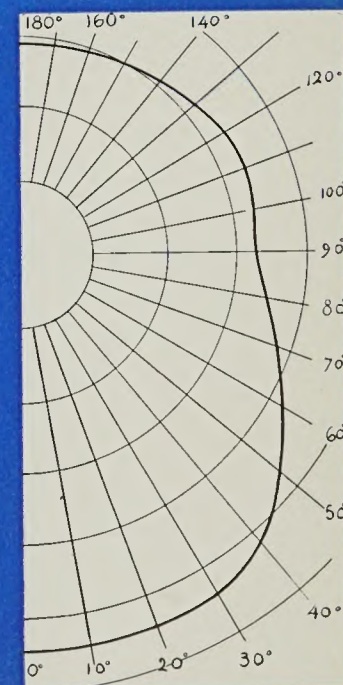
These LINOLITE Fluorescent Fixtures can be installed at existing lighting outlets to provide higher levels of illumination at reduced operating cost. The quality of light emitted from these fixtures is soft. Its daylight characteristics result in better and more comfortable vision. The glare which generally accompanies ordinary incandescent lighting has been completely eliminated.

As shown by the light curve chart, these LINOLITE units are designed to provide good general illumination on the working plane, as well as suffi-

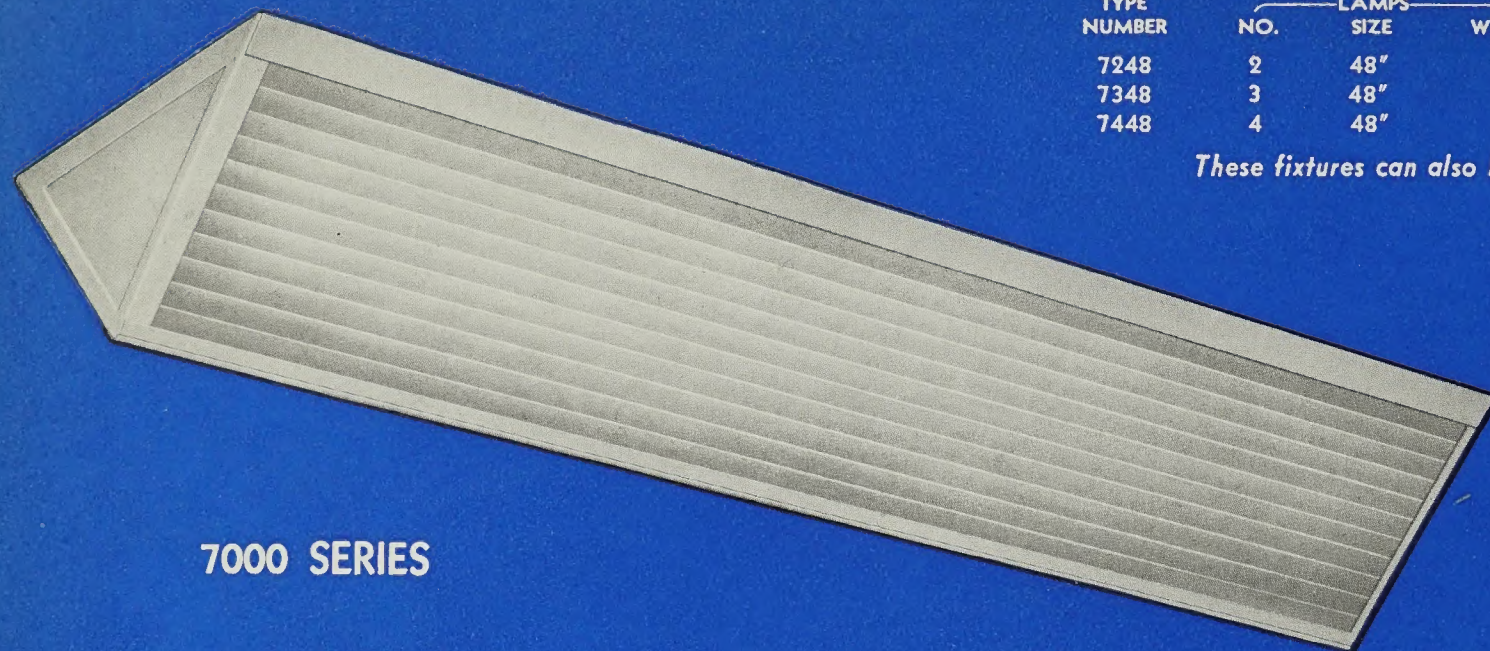
cient upward light to illuminate the ceiling, reducing brightness-contrast. The light diffuser panels are of negatively fluted glass, treated to control the brightness of the fixture.

All fixtures are supplied complete with laboratory-tested ballasts, compensators, sockets and starters to accommodate Fluorescent lamps. Furnished either for ceiling or suspension mounting. Wired ready for installation with high power factor equipment. See following two pages for specification data, hanger assembly and photos of enclosed units.

Mean Characteristic
C. P. Curve of These
Three Fixtures
(Individual E.T.L.
Curves furnished on
application)



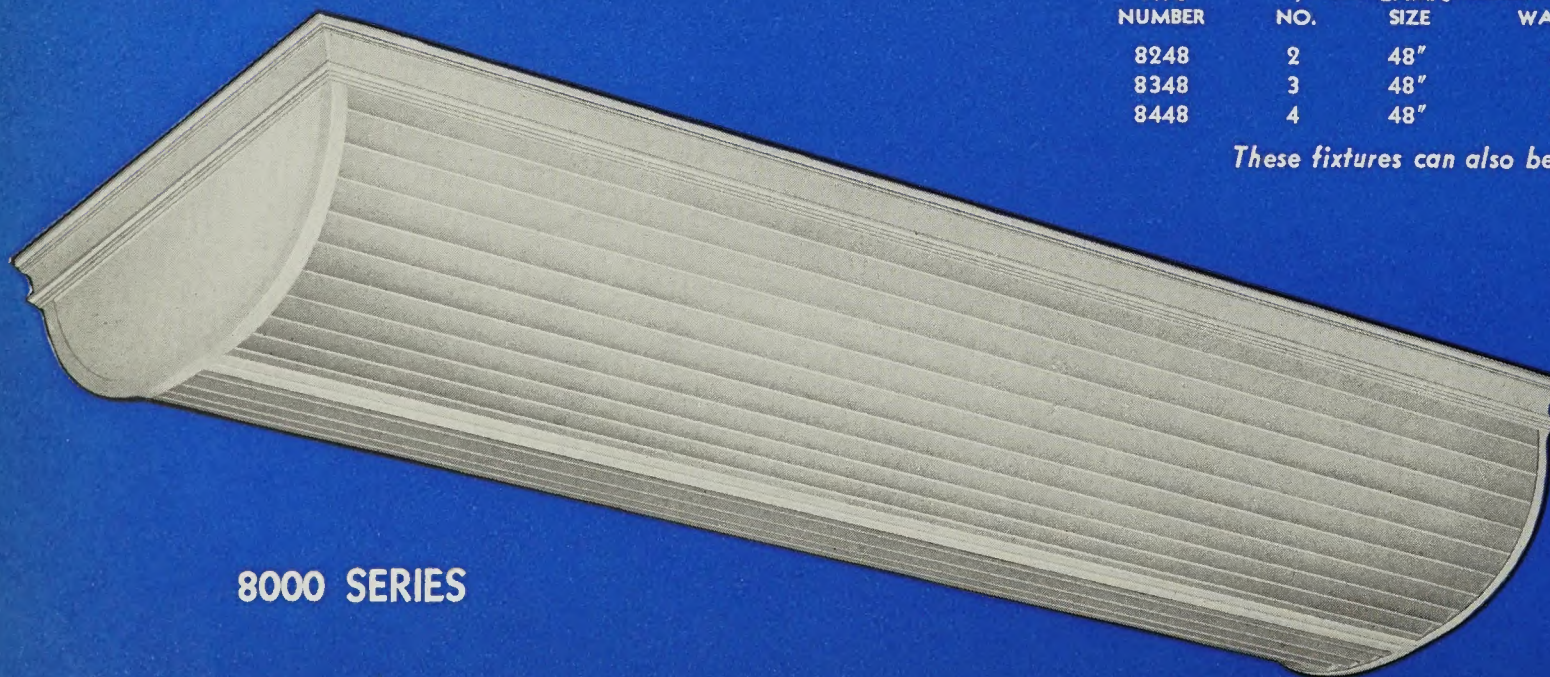
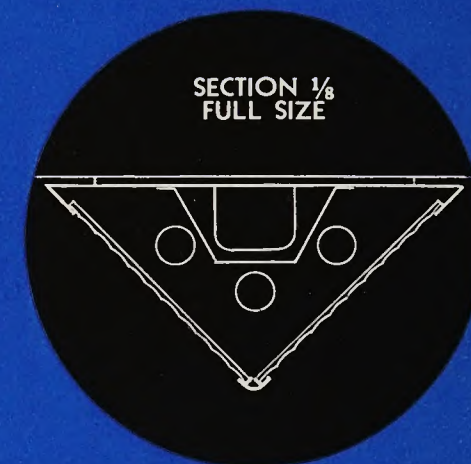
ENGINEERED FOR PERFORMANCE



7000 SERIES

TYPE NUMBER	LAMPS			DIMENSIONS		
	NO.	SIZE	WATTAGE	WIDTH	DEPTH	LENGTH
7248	2	48"	40	16"	8"	48 1/4"
7348	3	48"	40	16"	8"	48 1/4"
7448	4	48"	40	16"	8"	48 1/4"

These fixtures can also be furnished in 8 ft. lengths



8000 SERIES

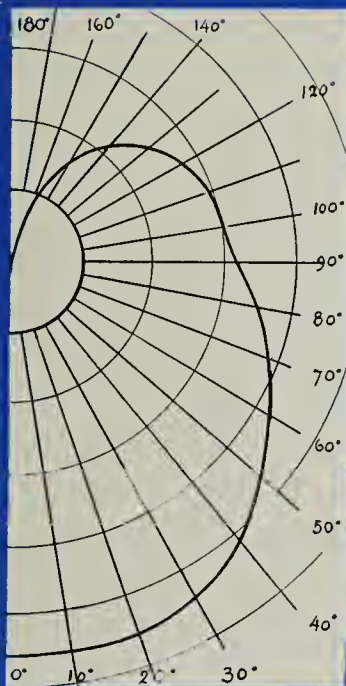
TYPE NUMBER	LAMPS			DIMENSIONS		
	NO.	SIZE	WATTAGE	WIDTH	DEPTH	LENGTH
8248	2	48"	40	15 1/2"	7"	49"
8348	3	48"	40	15 1/2"	7"	49"
8448	4	48"	40	15 1/2"	7"	49"

These fixtures can also be furnished in 8 ft. lengths



COMMERCIAL FLUORESCENT TYPES

Mean Characteristic C. P. Curve of Fixtures Shown on Opposite Page (Individual E.T.L. Curves Furnished on Application)



Section below shows Recessed Type in 8000 SERIES



STANDARD HANGER

Type FL-H

Hangers are finished to match fixtures. Standard lengths are 18", 24", 30" and 36". (Specify length when ordering.)

Special hangers, both plain and ornamental in design, can be furnished if desired at slight additional cost.



SPECIFICATION DATA

Tested and Approved . . . Frink is a certified Fluor-O-Lier manufacturer. All materials and accessories used are certified by the Mozdol Lamp Manufacturers. All fixtures are made and wired with high power factor ballasts by Union Labor and bear the label of the Underwriters' Laboratories. All meet the standards established by the Department of Water Supply, Gas and Electricity of New York City.

Guaranteed Finish . . . All exposed metal parts and reflecting surfaces are finished with our special, newly perfected FRINK Permo-White. This exceptionally hard permanent finish (baked at 350° F.) with its high reflection factor, is guaranteed not to crack, peel or discolor.

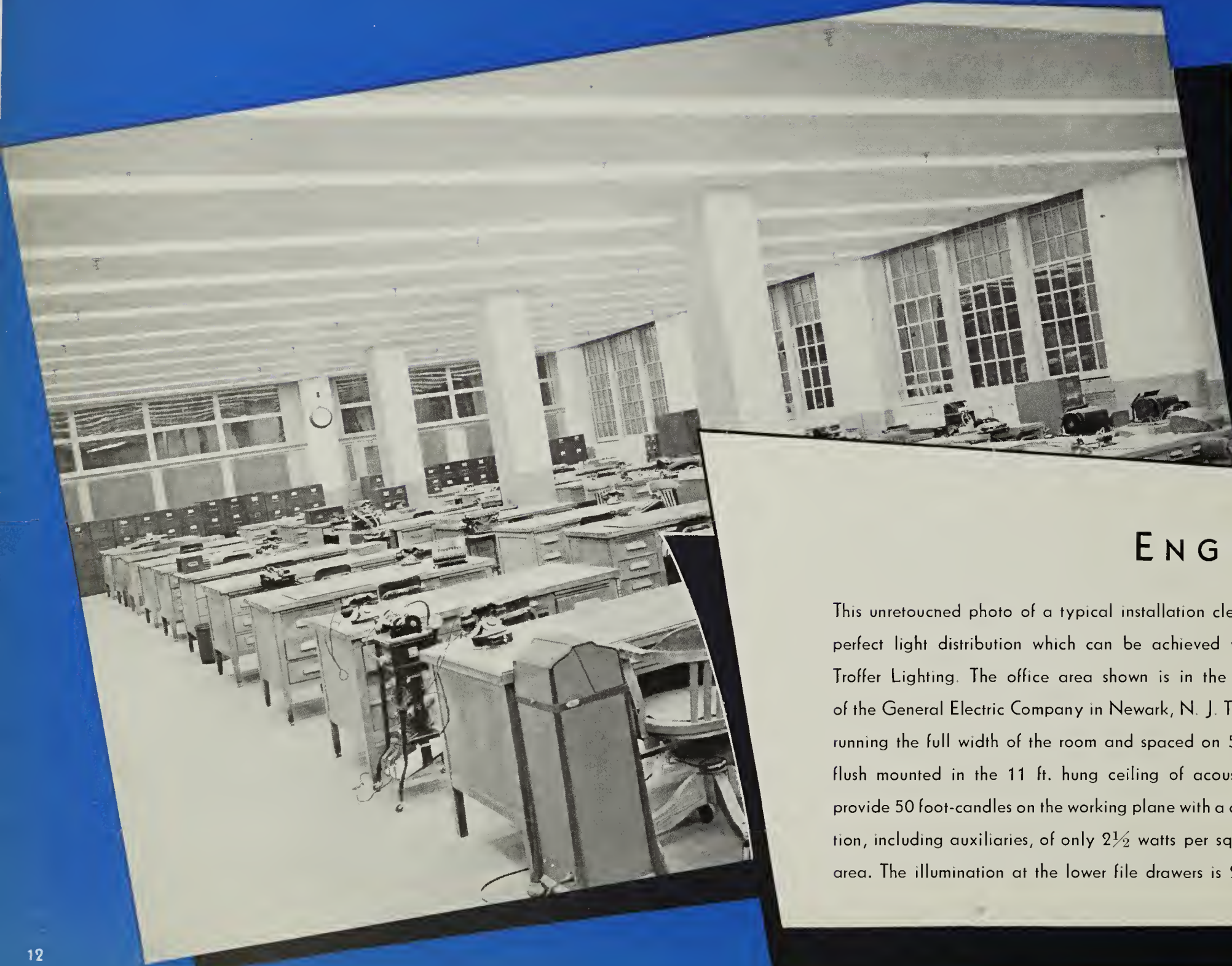
Accessibility . . . All operating equipment and wiring are easily accessible for installation, inspection

and maintenance without dismantling or removing fixtures. This feature makes Borkon-Frink LINOLITE units the most economical to install, service and maintain.

Sizes and Capacities . . . Fixtures are made to accommodate two, three or four 24", 36" or 48" Fluorescent lamps. They can be had in either 4' or 8' lengths. If desired, provision can be made for mounting fixtures end-to-end to provide continuous runs. Special mitered corners make it possible to arrange units in rectangles or squares.

Voltages . . . Available for 110-125, 199-216, 220-250 Volts A.C. 60 cycles. For a slight increase in cost, fixtures may be wired for 50 cycle operation. Specify type of service when ordering.

ENGINEERED FOR PERFORMANCE



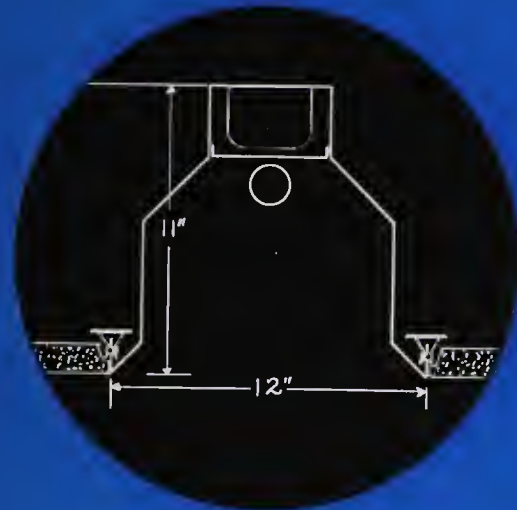
ENGINEERED FOR

This unretouched photo of a typical installation clearly reveals the perfect light distribution which can be achieved with LINOLITE Troffer Lighting. The office area shown is in the service division of the General Electric Company in Newark, N. J. The trough lights, running the full width of the room and spaced on 5 ft. centers, are flush mounted in the 11 ft. hung ceiling of acoustical tile. They provide 50 foot-candles on the working plane with a current consumption, including auxiliaries, of only $2\frac{1}{2}$ watts per square ft. of floor area. The illumination at the lower file drawers is 25 foot-candles.

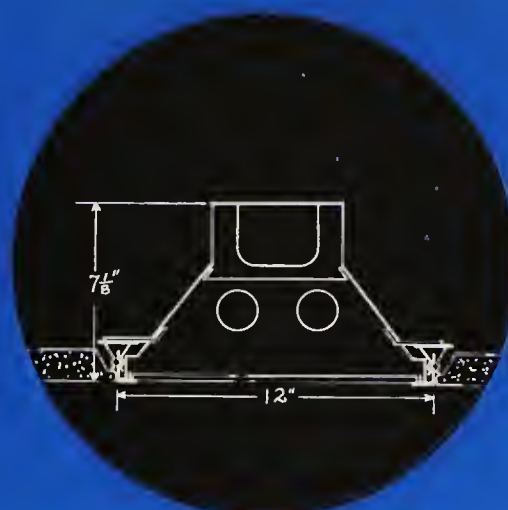
FLUORESCENT TROFFER LIGHTING

SPECIFICATION DATA

Barkon-Frink LINOLITE Fluorescent Troffer Lighting can be supplied in any length to fit conditions. Troughs are furnished completely wired with ballasts, sockets, starter sockets and compensators to take Fluorescent lamps. Troughs are made of terne plate steel. Inner reflecting surface is finished with Frink Perma-White baked at 350° F. Each unit is provided with a special lap-butt joint for connecting and making the trough continuous. By means of special mitered corners the troffers may be arranged in squares or rectangles. Like all Barkon-Frink products, LINOLITE troffer units are Union Made and are approved by the Underwriters' Laboratories.



9000 SERIES—Detail shows Barkon-Frink LINOLITE troffer unit with single row of Fluorescent lamps. This trough design also comes equipped for double row of lamps. Louvres can be supplied.



10,000 SERIES—Detail shows Barkon-Frink LINOLITE troffer unit with double row Fluorescent lamps and negatively fluted, ground glass diffuser. Also supplied with single row of lamps.

APPLICATIONS

LINOLITE Troffer Lighting is designed for general illumination where high levels of well diffused light are desired. Because they produce a cool glareless light these units are practical for low mounting heights. The types illustrated here in cross-section are specially designed for use in acoustical and other hung ceilings. For use in ordinary soffits, units are made with flat ceiling flange permitting easy installation.

TYPES AND SIZES

TYPE NUMBER	LAMPS		GLASS	WIDTH	DEPTH
	NO.	SIZES			
9100	1	24", 36", 48" and 60"	None	12"	11"
9200	2	24", 36" and 48"	None	12"	11"
10100	1	24", 36", 48" and 60"	Yes	12"	7 1/8"
10200	2	24", 36" and 48"	Yes	12"	7 1/8"

FOR VISION

The extreme uniformity of illumination and the general diffuse character of LINOLITE troffer lighting are clearly evidenced here by the soft shadows under the desks. Note also the relatively low brightness of the ceiling, with no severe contrast between the edges of reflectors and adjoining ceiling. The installation of this highly efficient and comfortable type of lighting is extremely simple. In the case illustrated the 8 ft. trough sections were made in one piece with lips designed to fit into the acoustical T sections.

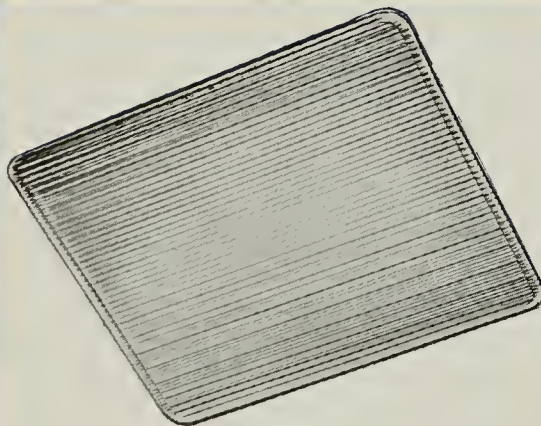
Frink Controlens Units

10000-H SERIES

These special units are designed to accommodate any of the three types of Holophane Lenses illustrated and described below. May be recessed in ceiling, surface mounted or hung. Incorporates the advantages of LINOLITE'S sound design and quality construction with Holophane's light-control features.

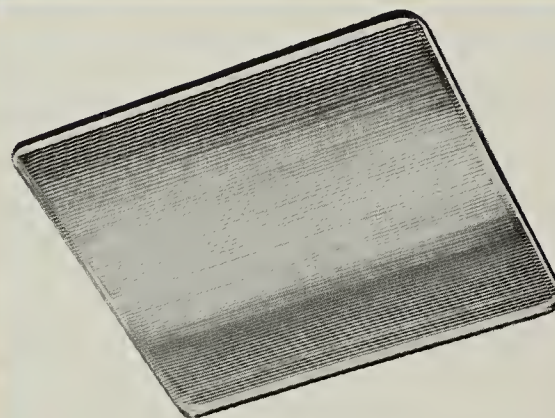
Detailed drawings of Holophane equipment will be furnished on request

TYPE NUMBER	NO.	LAMPS		LENS NO.	DIMENSIONS	
			SIZES		WIDTH	DEPTH
10100-H	1	24", 36", 48" and 60"		11-F-12	12"	7 ¹ / ₈ "
10200-H	2	24", 36" and 48"		11-F-12	12"	7 ¹ / ₈ "
10300-H	3	24", 36" and 48"		11-F-12-C	12"	7 ¹ / ₈ "



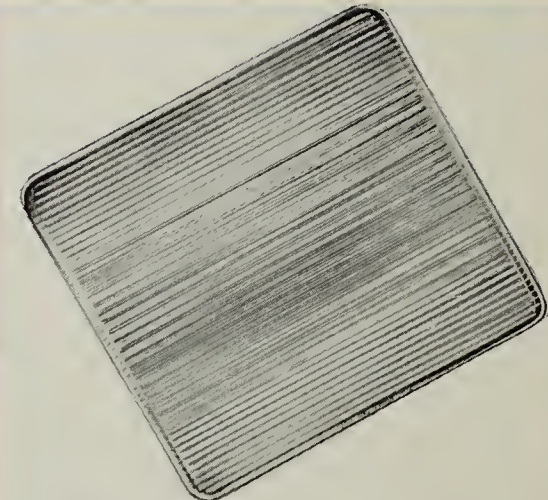
INTENSIVE CONTROLENS

This type of Controlens is designed for uniform spacing on horizontal surfaces in rooms of normal height.



CONCENTRATING CONTROLENS

This type is for concentrated accent lighting. Also for general illumination from high ceilings or offset lighting.



EXTENSIVE CONTROLENS

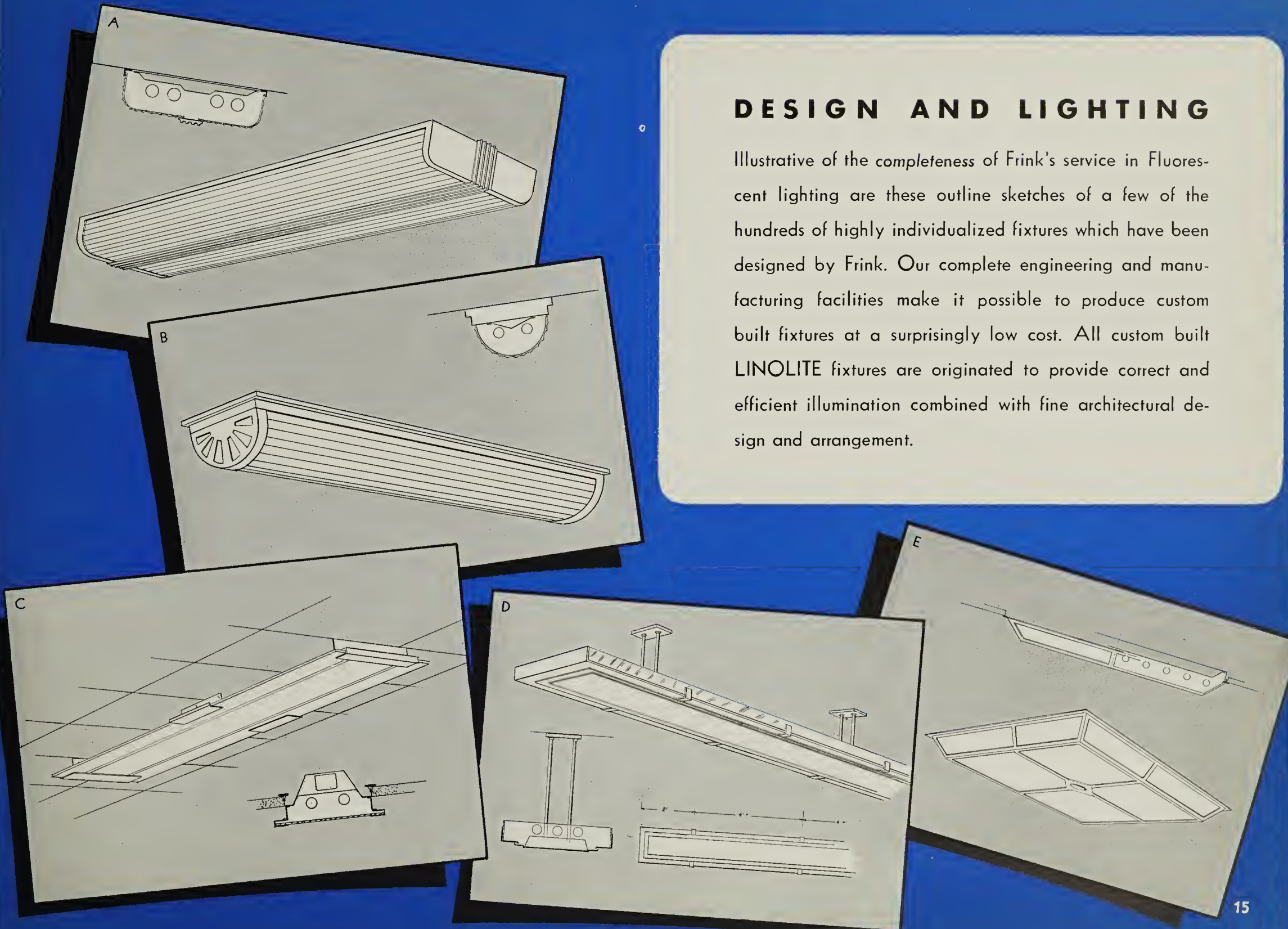
Suitable for areas where a large component of vertical surface illumination is required. Is particularly suited for low ceiling areas.



ENGINEERED FOR PERFORMANCE

DESIGN AND LIGHTING

Illustrative of the completeness of Frink's service in Fluorescent lighting are these outline sketches of a few of the hundreds of highly individualized fixtures which have been designed by Frink. Our complete engineering and manufacturing facilities make it possible to produce custom built fixtures at a surprisingly low cost. All custom built LINOLITE fixtures are originated to provide correct and efficient illumination combined with fine architectural design and arrangement.



FRINK, through its integrated divisions, designs and produces the ultimate in Individualized Installations...

Long before Fluorescent lamps were available, Barkon-Frink engineers were experimenting both in Fluorescent lighting research and in the design of many types of Fluorescent equipment. As pioneers in this highly specialized lighting field, the experts in Frink's designing, engineering, manufacturing and installing divisions necessarily integrated their work to take advantage of every new advancement in each phase of Fluorescent lighting.

★ ★ ★

Distinctive interiors like this of the Waltham Federal Savings and Loan Company call for equally distinctive illumination as exemplified by this highly efficient custom-built LINOLITE installation.



Custom Built FLUORESCENT EQUIPMENT

As Dr. Killian, Frink's Technical Director, points out on page 4 of this catalogue, this Fluorescent development work has been carried on with the knowledge that "the *principles* of good lighting are unchanged by the introduction of a new source." Thus, in designing fixtures and planning installations, Frink has steadfastly developed its Fluorescent recommendations only in accordance with the best lighting practice as determined during over 80 years of continuous practical experience. It is due primarily to the great scope and length of this experience, today unequalled in the lighting industry, that Frink owes the outstanding efficiency and artistry of its *Custom-Built* Fluorescent installations of which the two illustrated here are typical.



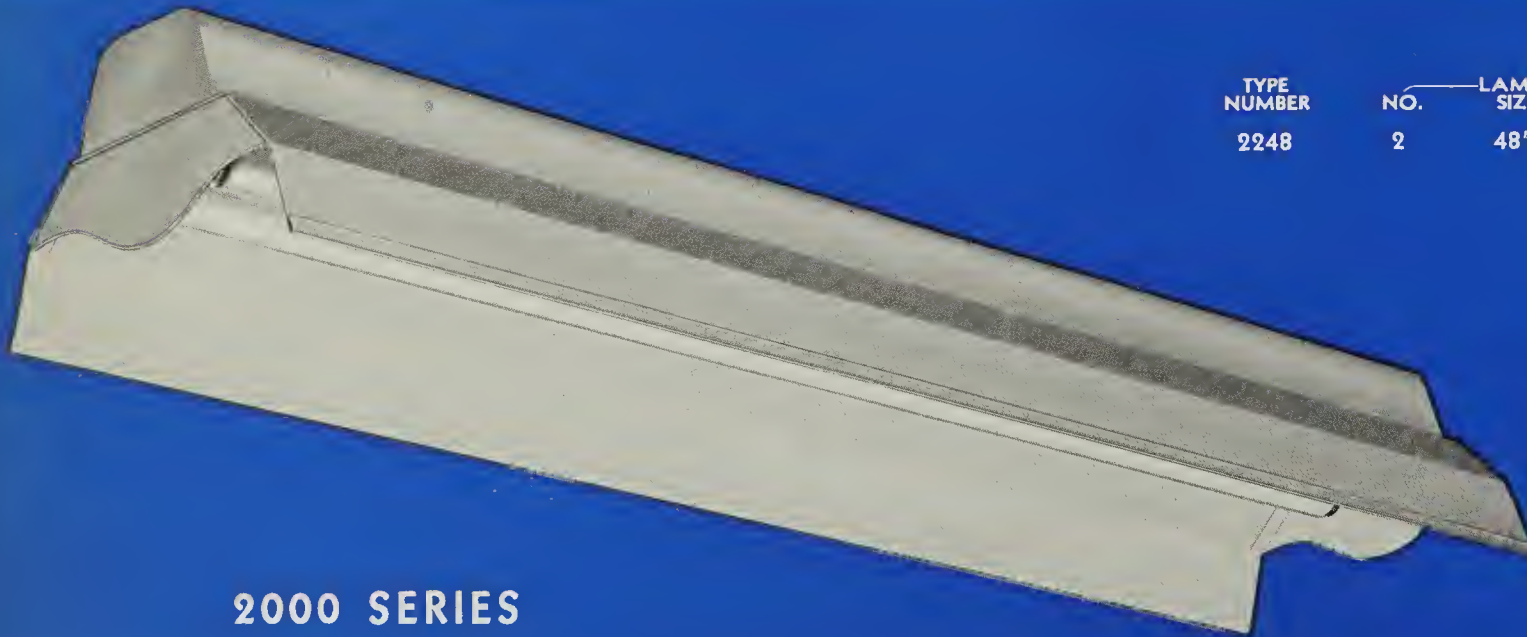
To show off beautiful furs to their best advantage and to fit in perfectly with a striking decorative scheme. These were the specifications for lighting which Frink engineers met so satisfactorily in this LINOLITE installation for Jaeckel, Inc., N. Y.



1000 SERIES

TYPE NUMBER	LAMPS		WATTAGE	DIMENSIONS		
	NO.	SIZE		WIDTH	DEPTH	LENGTH
1248	2	48"	40	11½"	5½"	49¼"

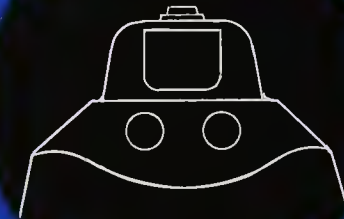
SECTION ⅛
FULL SIZE



2000 SERIES

TYPE NUMBER	LAMPS		WATTAGE	DIMENSIONS		
	NO.	SIZE		WIDTH	DEPTH	LENGTH
2248	2	48"	40	12½"	8¼"	49"

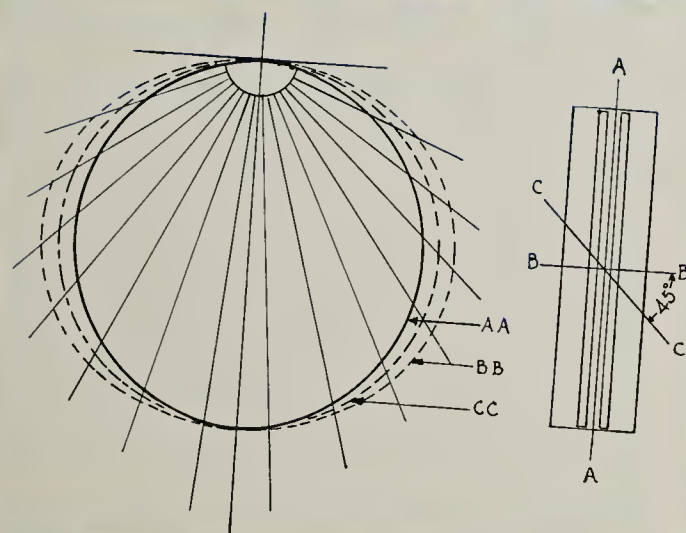
SECTION ⅛
FULL SIZE



INDUSTRIAL FLUORESCENT TYPES



Why L-I-N-O-L-I-T-E Units are Right For the EYES OF AMERICAN INDUSTRY



Typical distribution curve of the industrial fixtures

1. Designed to combine maximum "shielding" with high lighting efficiency, LINOLITE industrial units reduce the direct glare of bare lamps while providing adequate horizontal and vertical illumination, without harsh shadows, at the working plane.
2. Maximum efficiency is easily maintained, because porcelain enamel reflectors are readily removed for cleaning without disturbing sockets or ballasts. (Reflecting surfaces are available with the new FRINK-PERMA-WHITE "high-factor" finish. Baked at 350°F, this finish is *guaranteed* not to crack, peel or discolor.)
3. Overall efficiency of all units meets all standards. Power factor, 90%, or over. Light is practically non-stroboscopic due to use of Tulamp ballast.
4. All parts easily accessible for economical installation, inspection and maintenance.
5. Units stand up under variable atmospheric and temperature conditions, because all parts are rust-proofed and outside surfaces are protected with durable grey finish.

(Available for 110-125, 199-216, 220-250 Volts A.C. 60 cycles. For a slight increase in cost, fixtures may be wired for 50 cycle operation.)

ENGINEERED FOR PERFORMANCE

GENERAL COMMENTS

General lighting design is merely a procedure which allows us to predetermine the average lumens per square foot (footcandles) delivered to a horizontal work plane equal to the floor area.

Conversely, knowing the footcandles desired, the problem is to account for losses due to room proportions, color of walls and ceiling, and fixture efficiency and light distribution, so that we can specify the total lamp lumens that must be generated.

Footcandle Standards—The chart on the lower left shows the general footcandle levels being employed in practical installations. This picture of the various steps indicates that where significant and measurable improvements in illumination effectiveness are expected, the existing footcandle level should at least be doubled.

Equipment Spacing and Layout—In order to get thoroughly uniform illumination over an area, the maximum spacing between units, as shown in the table on the right, should not be exceeded. Closer spacing to conform to bays, other building construction features and the number of fixtures is quite often necessary.

Where continuous rows of units are used, the

figures apply to the spacing between rows. Due to the limited lumen output of Fluorescent fixtures, conventional spacing distances often cannot be used. The problem then becomes one of first figuring out the number of fixtures required to deliver the necessary lumens, and then planning the layout to accommodate this number of units.

Room Proportions—This table classifies rooms according to width, length and height of light source. Determine the Room Index and apply it in the Coefficients of Utilization Table.

Coefficients of Utilization—This table brings together all of the factors that affect the utilization of light. The figure obtained by reference to this table (for the type of fixtures used, the size and finish of the room in which these are to be installed) is the percentage of the lumens given out by the lamps that reaches the working plane. For example, a Utilization factor of .40 means that 40 per cent of the light is useful in producing foot candles and that 60 per cent is absorbed by the walls, ceiling and the fixture itself.

Luminaire Efficiency and Light Distribution—Coefficients of Utilization are calculated for the output and distribution shown.

Initial Footcandles vs Footcandles Maintained in Service—Initial footcandles measured when lamps are new and when the equipment is clean will be higher than the average maintained in service. To allow for this, a Maintenance Factor (M.F.) is given to indicate the approximate percentage of initial footcandles to be expected under reasonable maintenance schedules of cleaning and repainting.

Calculations—The lamp lumens required to light a room are computed from the formula:

$$\text{Lamp Lumens Required} = \frac{\text{Footcandles} \times \text{Area of Room}}{\text{Coefficient of Utilization} \times \text{Maintenance Factor}}$$

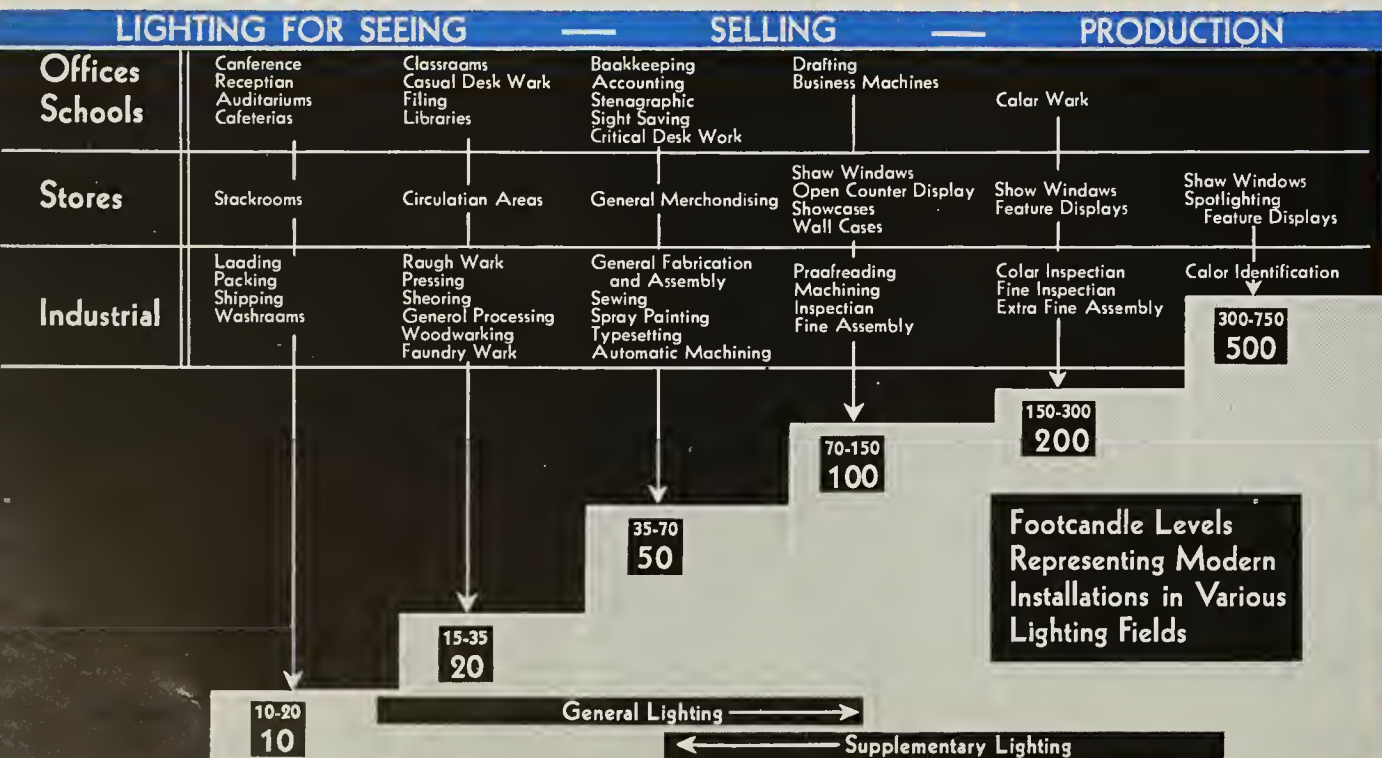
The number of Luminaires to be installed is obtained from the formula:

$$\text{Number of Luminaires to be Installed} = \frac{\text{Total Lumens Required}}{\text{Lamp Lumens per Luminaire}}$$

ROOM INDEX

		CEILING HEIGHT—FEET									
For Semi-Indirect and Indirect Lighting		9 and 9½	10 to 11½	12 to 13½	14 to 16½	17 to 20	21 to 24	25 to 30	31 to 36	37 to 50	
		MOUNTING HEIGHT ABOVE FLOOR—FEET									
For Direct and Semi-Direct Lighting		7 and 7½	8 and 8½	9 and 9½	10 to 11½	12 to 13½	14 to 16½	17 to 20	21 to 24	25 to 30	
Room Width (Feet)	Room Length (Feet)	ROOM INDEX									
9 (8½-9)	8-10	H	I	J	J	J	J	J	J	J	
	10-14	H	I	J	J	J	J	J	J	J	
	14-20	G	H	I	J	J	J	J	J	J	
	20-30	G	H	I	J	J	J	J	J	J	
	30-42	F	G	H	I	J	J	J	J	J	
10 (9½-10½)	10-14	G	H	I	J	J	J	J	J	J	
	14-20	F	G	H	I	J	J	J	J	J	
	20-30	F	G	H	I	J	J	J	J	J	
	30-42	F	G	H	I	J	J	J	J	J	
	42-60	E	F	G	H	I	J	J	J	J	
12 (11-12½)	10-14	G	H	I	J	J	J	J	J	J	
	14-20	F	G	H	I	J	J	J	J	J	
	20-30	F	G	H	I	J	J	J	J	J	
	30-42	F	G	H	I	J	J	J	J	J	
	42-60	E	F	G	H	I	J	J	J	J	
14 (13-15½)	10-14	F	G	H	I	J	J	J	J	J	
	14-20	F	G	H	I	J	J	J	J	J	
	20-30	E	F	G	H	I	J	J	J	J	
	30-42	E	F	G	H	I	J	J	J	J	
	42-60	E	F	G	H	I	J	J	J	J	
17 (16-18½)	10-14	F	G	H	I	J	J	J	J	J	
	14-20	E	F	G	H	I	J	J	J	J	
	20-30	D	E	F	G	H	I	J	J	J	
	30-42	D	E	F	G	H	I	J	J	J	
	42-60	D	E	F	G	H	I	J	J	J	
20 (19-21½)	10-14	D	E	F	G	H	I	J	J	J	
	14-20	D	E	F	G	H	I	J	J	J	
	20-30	D	E	F	G	H	I	J	J	J	
	30-42	D	E	F	G	H	I	J	J	J	
	42-60	C	D	E	F	G	H	I	J	J	
24 (22-26)	10-14	C	D	E	F	G	H	I	J	J	
	14-20	C	D	E	F	G	H	I	J	J	
	20-30	C	D	E	F	G	H	I	J	J	
	30-42	C	D	E	F	G	H	I	J	J	
	42-60	C	D	E	F	G	H	I	J	J	
30 (27-33)	10-14	C	D	E	F	G	H	I	J	J	
	14-20	C	D	E	F	G	H	I	J	J	
	20-30	C	D	E	F	G	H	I	J	J	
	30-42	C	D	E	F	G	H	I	J	J	
	42-60	B	C	D	E	F	G	H	I	J	
36 (34-39)	10-14	B	C	D	E	F	G	H	I	J	
	14-20	B	C	D	E	F	G	H	I	J	
	20-30	B	C	D	E	F	G	H	I	J	
	30-42	B	C	D	E	F	G	H	I	J	
	42-60	A	B	C	D	E	F	G	H	I	
42 (40-45)	10-14	A	B	C	D	E	F	G	H	I	
	14-20	A	B	C	D	E	F	G	H	I	
	20-30	A	B	C	D	E	F	G	H	I	
	30-42	A	B	C	D	E	F	G	H	I	
	42-60	A	B	C	D	E	F	G	H	I	
50 (46-55)	10-14	A	B	C	D	E	F	G	H	I	
	14-20	A	B	C	D	E	F	G	H	I	
	20-30	A	B	C	D	E	F	G	H	I	
	30-42	A	B	C	D	E	F	G	H	I	
	42-60	A	B	C	D	E	F	G	H	I	
60 (56-67)	10-14	A	B	C	D	E	F	G	H	I	
	14-20	A	B	C	D	E	F	G	H	I	
	20-30	A	B	C	D	E	F	G	H	I	
	30-42	A	B	C	D	E	F	G	H	I	
	42-60	A	B	C	D	E	F	G	H	I	
75 (68-90)	10-14	A	B	C	D	E	F	G	H	I	
	14-20	A	B	C	D	E	F	G	H	I	
	20-30	A	B	C	D	E	F	G	H	I	
	30-42	A	B	C	D	E	F	G	H	I	
	42-60	A	B	C	D	E	F	G	H	I	

Room Index is the classification of a room according to its proportions; large and small rooms of the same proportion have the same index. Hence, for large rooms of dimension greater than those shown, divide each dimension by the same number and use the index determined for the smaller room.



Equal Steps in Footcandle Effectiveness

SPACINGS

Light Distribution	Diffused						Semi-Concentrating	Concentrating
	Indirect	Semi-Indirect	Semi-Direct	Direct	Direct	Direct	Direct	Direct
Mounting Height of Luminaire								
Ceiling Height for Indirect and Semi-Indirect Luminaires								
All Dimensions in Feet	Spacing Between Units	Spacing* From Walls	Length of Suspension	Usual Spacing Between Units	Maximum Spacing Between Units	Spacing* From Walls	Maximum Spacing Between Units	Maximum Spacing Between Units
8	9	3	1-3	7	7½	3	5½	2½
9	9½	3	1½-3	8	8	3	6	3
10	10½	3½	2-3	9	9	3½	7	4
11	12	3½	2-3	10	10½	3½	8	4½
12	14	4	2½-4	10-12	12	4	9	5
13	15	4	3-4	10-12	13	4	10	5½
14	17	5	3-4	10-13	15	5	11	6
15	19	5	3-4	10-13	17	5	12	6½
16	21	6	4-5	10-13	19	6	13	7
18	23	6	4-5	10-20	21	6	15½	8
20 or More	26	7	4-6	18-24	24	7	17½	9

*These spacings apply where desks and benches are next to wall, otherwise one-half the spacing between units is satisfactory.

LUMEN OUTPUT OF FLUORESCENT LAMPS

LENGTH	LAMP WATTS	WHITE	DAYLIGHT	SOFT WHITE
15"	14	460	370	320
18"	15	585	510	435
24"	20	860	730	640
36"	30	1400	1250	1100
36"	65	2100	1800	...
48"	40	2100	1700	1500
60"	100	4200	3350	2950

These figures apply to Mazda Fluorescent lamps at rated voltage after 100 hours operation. For total wattage, ballast losses, which are approximately 20% of lamp wattages, must be added.

FLUORESCENT SUGGESTIONS

The fluorescent lamp, due to its tubular form, suggests many new layout and installation methods. Continuous rows of units or "troffers" either in long runs or in the form of rectangles and squares have been very successfully and economically used. Although fluorescent lamps are much more limited in the range of wattage and light output than incandescent, it is usually possible to obtain a very flexible plan of fluorescent lighting by giving careful thought in advance to the switching and circuiting as well as the layout. Provision for future increases in illumination must be provided for in a flexible layout to accommodate added fixtures or rows of units to coordinate with the original installation.

Since colors appear differently, not only under incandescent and various fluorescent lamps but also under different surrounding conditions, it is important that a proposed color scheme be examined under the type of light contemplated.

BARKON-FRINK FLUORESCENT LUMINAIRES

Candlepower
Distribution

Ceiling	75%			50%			30%		
	Walls	50%	30%	10%	50%	30%	10%	30%	10%
Room Index	COEFFICIENTS OF UTILIZATION								
J I H G F E D C B A	.35	.30	.27	.35	.30	.27	.30	.27	
	.44	.39	.36	.43	.38	.35	.38	.35	
	.48	.44	.41	.47	.44	.41	.43	.41	
	.51	.47	.44	.50	.47	.44	.44	.43	
	.54	.51	.47	.53	.49	.47	.49	.47	
	.58	.55	.53	.57	.54	.52	.54	.52	
	.63	.60	.56	.61	.59	.56	.58	.56	
	.65	.62	.59	.63	.61	.60	.61	.59	
	.68	.65	.63	.66	.64	.62	.63	.61	
.70	.67	.65	.68	.65	.64	.64	.63		
J I H G F E D C B A	.37	.32	.28	.37	.32	.28	.31	.28	
	.46	.41	.38	.45	.40	.37	.40	.37	
	.50	.46	.43	.49	.46	.43	.45	.43	
	.54	.50	.47	.53	.50	.47	.48	.47	
	.58	.54	.50	.56	.52	.50	.52	.50	
	.62	.59	.56	.61	.58	.56	.57	.56	
	.67	.64	.60	.65	.63	.60	.62	.60	
	.69	.66	.63	.67	.64	.63	.64	.62	
	.72	.69	.67	.70	.68	.66	.67	.66	
.74	.71	.69	.72	.69	.68	.68	.67		
J I H G F E D C B A	.25	.21	.18	.23	.19	.17	.18	.16	
	.30	.26	.24	.29	.24	.22	.23	.21	
	.34	.30	.28	.32	.28	.25	.25	.23	
	.39	.34	.31	.34	.31	.29	.29	.27	
	.42	.37	.33	.37	.33	.31	.31	.29	
	.46	.42	.37	.41	.37	.34	.34	.32	
	.50	.45	.41	.44	.41	.37	.37	.35	
	.52	.47	.44	.46	.43	.40	.39	.37	
	.56	.51	.48	.50	.46	.43	.42	.40	
.58	.54	.51	.52	.48	.45	.43	.42		
J I H G F E D C B A	.23	.19	.16	.21	.17	.15	.16	.14	
	.28	.24	.22	.26	.22	.20	.21	.19	
	.31	.27	.25	.29	.25	.23	.23	.21	
	.35	.31	.28	.31	.28	.26	.26	.24	
	.38	.34	.30	.34	.30	.28	.28	.26	
	.42	.38	.34	.37	.34	.31	.31	.29	
	.45	.41	.37	.40	.37	.34	.34	.32	
	.48	.43	.40	.42	.39	.36	.35	.33	
	.51	.47	.44	.45	.41	.39	.38	.36	
.53	.49	.46	.47	.43	.41	.39	.38		
J I H G F E D C B A	.21	.17	.15	.19	.15	.14	.15	.13	
	.26	.22	.20	.24	.20	.18	.19	.17	
	.29	.25	.23	.27	.23	.21	.21	.19	
	.32	.29	.26	.29	.26	.24	.24	.22	
	.35	.31	.27	.31	.28	.26	.26	.24	
	.39	.35	.31	.34	.31	.29	.29	.27	
	.42	.38	.34	.37	.34	.31	.31	.30	
	.44	.40	.37	.39	.36	.33	.32	.30	
	.47	.43	.41	.42	.38	.36	.35	.33	
.49	.45	.43	.43	.40	.38	.36	.35		
J I H G F E D C B A	.25	.22	.21	.24	.22	.21	.22	.20	
	.31	.28	.27	.30	.27	.26	.27	.26	
	.33	.31	.30	.32	.31	.29	.30	.29	
	.36	.34	.32	.34	.32	.31	.32	.30	
	.39	.36	.34	.36	.34	.33	.34	.32	
	.40	.39	.37	.39	.37	.36	.36	.35	
	.44	.40	.38	.41	.38	.37	.38	.37	
	.45	.42	.39	.43	.39	.38	.39	.38	
	.47	.44	.42	.45	.42	.41	.41	.40	
.48	.46	.44	.46	.43	.42	.42	.41		
J I H G F E D C B A	.36	.32	.28	.36	.32	.28	.31	.28	
	.46	.41	.39	.45	.40	.38	.40	.38	
	.49	.44	.42	.48	.44	.42	.44	.42	
	.52	.49	.47	.51	.49	.47	.49	.47	
	.54	.51	.49	.53	.51	.49	.51	.49	
	.59	.57	.55	.58	.56	.53	.56	.53	
	.63	.61	.59	.62	.60	.58	.60	.58	
	.64	.62	.60	.63	.61	.59	.61	.59	
	.68	.66	.63	.66	.64	.62	.64	.62	
.69	.66	.64	.68	.65	.63	.65	.63		
J I H G F E D C B A	.32	.28	.25	.32	.28	.25	.27	.25	
	.40	.36	.34	.39	.35	.33	.35	.33	
	.43	.39	.37	.42	.39	.37	.39	.37	
	.46	.43	.41	.45	.43	.41	.43	.41	
	.48	.46	.43	.47	.45	.43	.45	.43	
	.51	.49	.47	.50	.48	.46	.48	.46	
	.55	.53	.51	.54	.52	.50	.52	.50	
	.58	.57	.55	.57	.56	.54	.56	.54	
	.61	.60	.58	.60	.59	.57	.59	.57	
.62	.61	.59	.61	.60	.58	.60	.58		

M.F. = .75

No. 1248 with Fired Porcelain Reflectors. Add 10% for Alzak.

M.F. = .75

No. 2248

M.F. = .65

No. 4248 No. 5248 No. 6248

M.F. = .65

No. 4348 No. 5348 No. 6348

M.F. = .65

No. 4448 No. 5448 No. 6448

M.F. = .70

No. 7348 No. 8348

M.F. = .75

Subtract 5% if Louvered.
Subtract 5% for No. 9248.
Subtract 10-20% for No. 10148 and No. 10248 depending on diffuser.

No. 9148

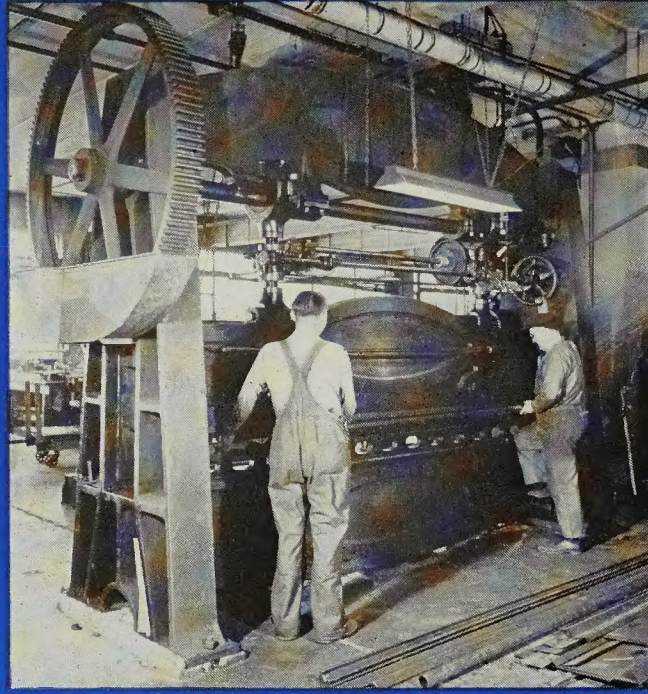
M.F. = .70

No. 10248-H with Lens 11-E12.
Add 8% for No. 10148-H.
Subtract 3% for No. 10160-H.

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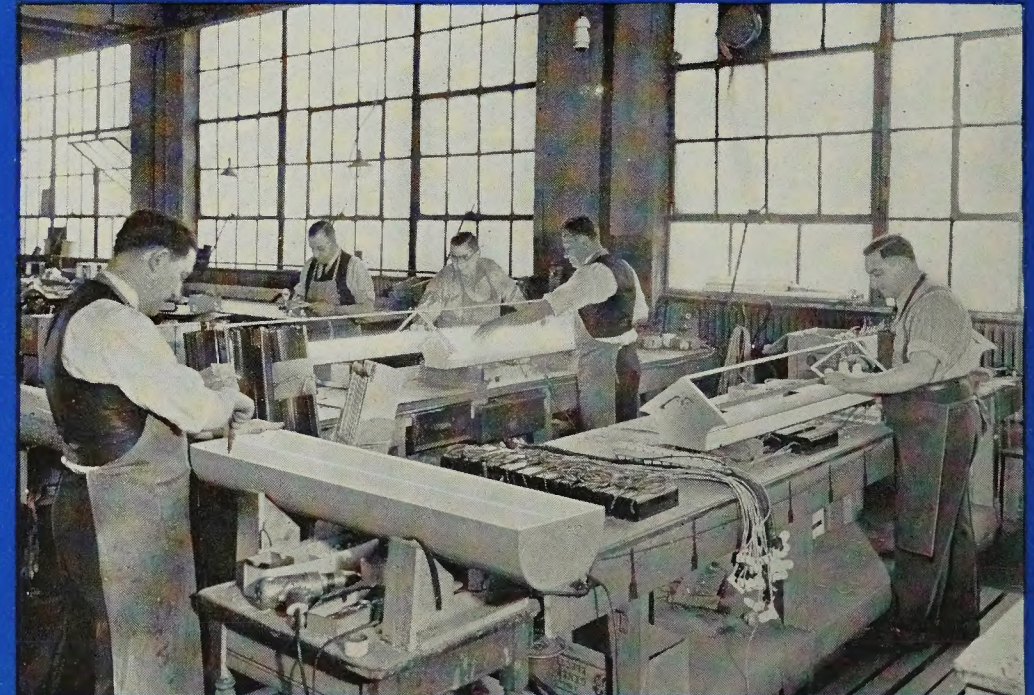
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A section of Frink's extensive sheet metal department.



Partial view of the assembling, wiring and testing department.

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